

IN THE U.S. PATENT AND TRADEMARK OFFICE

In re application of

MICHEL SERPELLONI, et al.

Conf. 9708

Application No. 10/534,038

Group 1615

Filed May 6, 2005

Examiner A. SASAN

USE OF BRANCHED MALTO-DEXTRINS AS GRANULATION BINDERS

RULE 132 DECLARATION

Assistant Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

I, Philippe LEFEVRE, the undersigned, a French citizen, residing at 3600 rue de Merville, HAVERSKERQUE 59660, do hereby declare:

1. I have a degree in chemical engineering from the National Graduate School of Engineering Chemistry of Lille (Ecole Nationale Supérieure de Chimie de Lille ENSCL), Lille University of Science and Technology (France).

2. I am currently employed as a Head of the Application Department for Pharmaceuticals and Cosmetics at ROQUETTE FRERES of Lestrem - 62136 - FRANCE, which is the assignee of the instant application, and I am conducting research in powder technology, pharmaceutical technology mainly focused on the development of new pharmaceutical excipients and new products for direct compression.

3. I am not an inventor of the above-identified application.

4. I have reviewed the file history of application Serial No. 10/534,038, including the specification, claims, and the Office Action mailed November 13, 2008. In doing so, I have reviewed the obviousness rejections over ONO et al. (US 5,080,908) in combination with FOUACHE et al. (US 6,630,586) and over OLINGER et al. (US 5,204,115) in combination with FOUACHE et al. (US 6,630,586) on pages 3-10 of the Office Action.

5. To further substantiate the benefits and thus the nonobviousness of the claimed invention over the prior art, I declare that (i) the branched maltodextrin according to the claimed invention is a very specific maltodextrin and is not equivalent to other maltodextrins and consequently dextrans, that (ii) solutions containing the branched maltodextrin according to the present invention are far more viscous than solutions containing other soluble fibers available on the market that are capable of being used as granulation binder (as explained p.13 1.1-4 and in example 1 p.17-18 of the specification), such as Litesse I, II and III (polydextrose), Pine Fiber (indigestible dextrin), Actilight 950P (fructo-oligosaccharide), Cup Oligo P (galacto-oligosaccharide) and Raftilose P95 (fructo-

oligosaccharide), and further that (iii) all maltodextrins are not equivalent in granulation and some maltodextrins do not work in granulation. I have conducted experiments which demonstrate that the claimed branched maltodextrins achieve surprising and superior properties in granulation.

Two granulations have been made according to conditions exemplified in the patent application (see example 2). One with a branched maltodextrin representative of the claims of this invention (NUTRIOSE® FB06, hereinafter, BMD) and one with a comparative maltodextrin, a potato based maltodextrin (hereinafter, GLUCIDEX® 1) as binders. The excipient is a crystalline xylitol (sold by the applicant company under the brand name XYLISORB® 90). The granulations are based on a dry mixture of 10% by weight of BMD or GLUCIDEX® 1 and 90% by weight of XYLISORB® 90. The wet granulation is carried out by spraying colored water with a pink coloring agent to highlight an eventual heterogeneity in the water distribution, the effectiveness of granulation and the rate and repartition of the soluble agents in the granules obtained.

Annex 1 includes black and white images of the granules obtained, i.e., as figure 1 and figure 2. The variation in shading corresponds to the variation in the intensity of the pink coloring agent.

The product obtained by using GLUCIDEX® 1 as binder is not homogeneous in shading and in particles size distribution.

The heterogeneity in shading (corresponding to a heterogeneity of color, e.g., pink, pale-pink, dark-pink, red and white) reflects the bad wettability of GLUCIDEX® 1. That is, the colored water is not uniformly absorbed by the GLUCIDEX® 1. Consequently, the granulation is very heterogenic with big agglomerates (A) which contain large amount of coloring agent shown by darker shaded agglomerates (corresponding to red and dark-pink agglomerates) and a large majority of non granulated powder (B) of a lighter shade( corresponding to pale-pink and white crystals). See figure 1. Thus, as seen in figure 1, even if the colored water is absorbed by GLUCIDEX® 1 or by XYLISORB® 90, the GLUCIDEX® 1 does not play the role of binder because though some of the powder includes a lighter shaded material (corresponding to pink), the material remains crystalline.

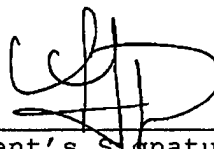
Consequently, GLUCIDEX® 1 is unusable as such a binder in a granulation process.

The granulation carried out with BMD provides a granulation product with a homogeneous particle size distribution and shading (color). It must be noticed that the totality of the powder has been granulated. See figure 2. Consequently, despite its high viscosity, BMD is surprisingly a very good binder for granulation process.

These experiments are evidence of the surprising and unexpected properties of the claimed invention.

6. I further declare that all statements made herein of my own knowledge are true and all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

Date: May 5, 2009

A handwritten signature in black ink, consisting of stylized, overlapping loops and strokes, positioned above a horizontal line.

Declarant's Signature

ANNEX 1

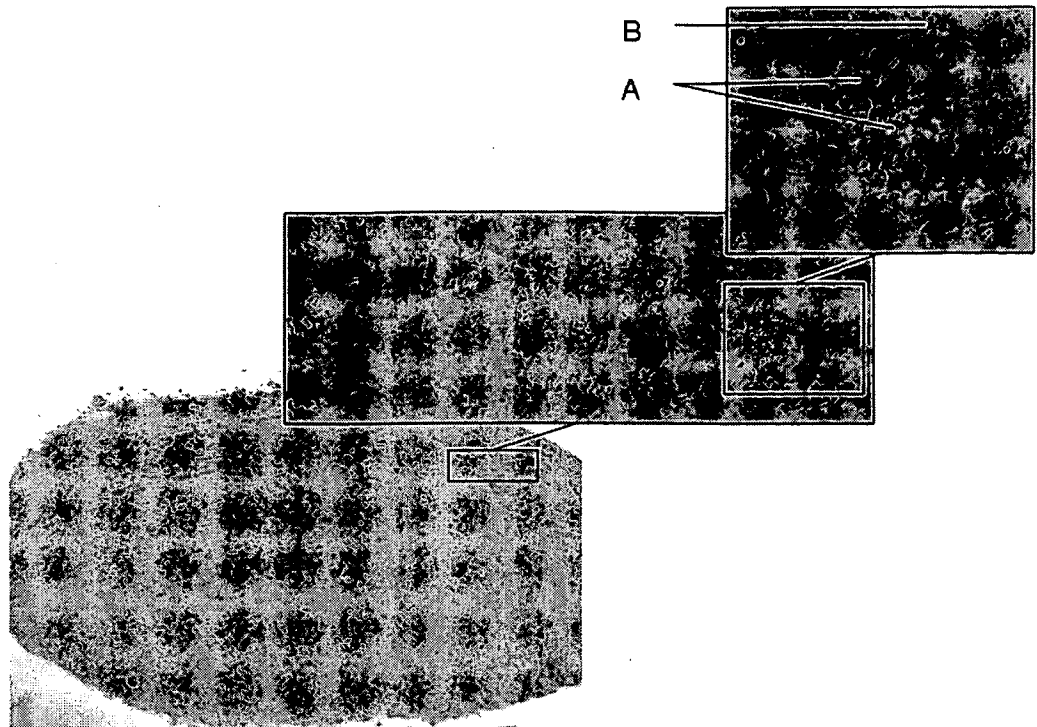


Figure 1: Granulation of XYLOSORB® 90 with GLUCIDEX® 1 as binder

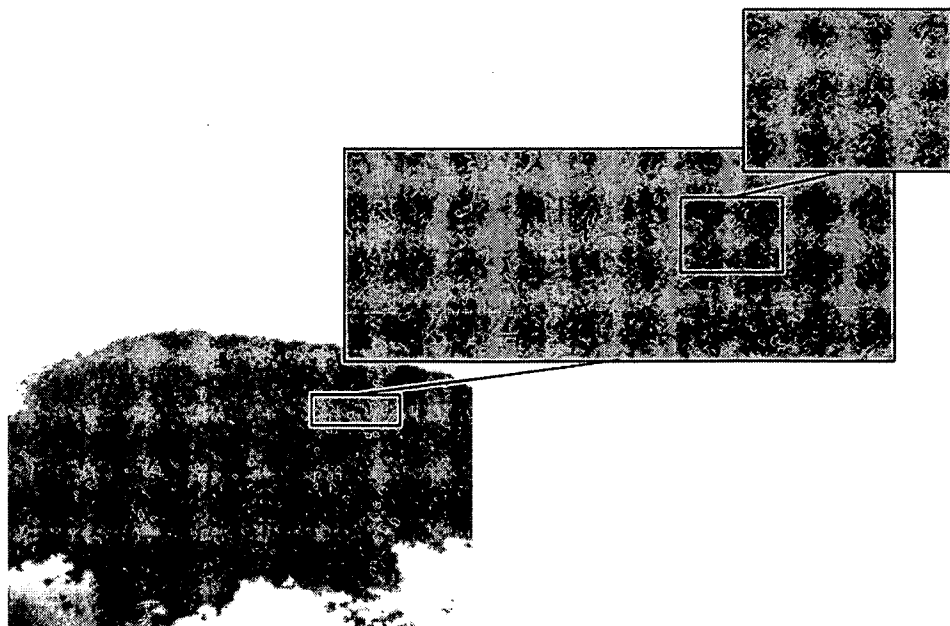


Figure 2: Granulation of XYLOSORB® 90 with BMD as binder

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49 years old

**Head of a laboratory department in pharmaceutical technology and  
powder science and technology**

**Education**

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1983: Chemical engineer degree from the National Graduate School of Engineering Chemistry of Lille (Ecole Nationale Supérieure de Lille ENSCL), Lille University of Science and Technology (France)

**Work experience**

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Since 1996: Head of the Application Department for Pharmaceuticals and Cosmetics, ROQUETTE Frères, Lestrem – 62136 – France

- In charge of 2 managers and 6 technicians
- Pharmaceutical technology: formulation of medicines and development of new excipients, mainly in the area of granulation, tableting and film-coating
- Powder science and technology: development and evaluation of crystalline or texturized powders, expertise in problems of flow, dispersion and dissolution of powders and blend of powders
- Cosmetics, mainly in the oral-care field (toothpastes)
- Active contribution to all decisions on developments of new excipients or new directly compressible products by ROQUETTE

1991-1996: Head of the Application Laboratory for Pharmaceuticals and Cosmetics (Roquette Frères – Lestrem – France)

1989-1990: Manager in the Application Department for Food, Pharma and Cosmetics (Roquette Frères – Lestrem – France)

1985-1989: Head of a quality control laboratory (Roquette Frères – Lestrem – France), in charge of 26 people

1983-1984: Military service: Measure of nuclear contamination around civil or military nuclear sites

**Patents**

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GIORDANO F, GAZZANIGA A, FOSSATI E, LEFEVRE P

"Microgranules obtained by extrusion-spheronisation, containing a cyclodextrine"

FR 2 705 677 (Pub. Date : Dec. 2, 1994)

LEFEVRE P, SALOME J P

"Polyol composition, process for its preparation and its applications"

US 5 773 604 (Date of Patent : Jun. 30, 1998)

LEFEVRE P, QUETTIER C

"Diluent and disintegrating composition, its method of achievement and its use"

US 6 184 213 (Date of Patent : Feb. 6, 2001)

**LEFEVRE P, DURIEZ X, HARRIS S L, STEFFENSMEIER G**

"Concentrated polyol composition"

US 6 528 069 (Date of Patent : Mar. 3, 2003)

**MORALY F, LABERGERIE E, LIS J, LEFEVRE P, BOUVIER F**

"Pulverulent sorbitol and its process of preparation"

US 6 274 778 (Date of Patent : Aug. 14, 2001)

US 6 365 789 – Division (Date of Patent : Apr. 2, 2002)

US 6 387 402 – Division (Date of Patent : May 14, 2002)

**MORALY F, LABERGERIE E, LIS J, LEFEVRE P**

"Dextrose in powder form and a process for the preparation thereof"

US 6451 122 (Date of Patent : Sep. 17, 2002)

US 6 527 868 – Division (Date of Patent : Mar. 4, 2003)

**SALOME J P, FERREZ P, LEFEVRE P**

"Process for preparing a noncrystallizable polyol syrup"

US 6 417 346 (Date of Patent : Jul. 9, 2002)

**LEFEVRE P, FUERTES P, QUETTIER C**

"Diluent and desintegrating composition, a process for the preparation thereof and the use thereof"

US 2001/0003619 (Pub. Date : Jun. 14, 2001)

**LABERGERIE E, LEFEVRE P, LIS J**

"Dextrose hydrate in powder form and a process for the preparation thereof"

US 6 881 432 (Date of Patent : Apr. 19, 2005)

**LABERGERIE E, LEFEVRE P, LIS J**

"Pulverulent mannitol and process for preparing it"

US 6 743 447 (Date of Patent : Jun. 1, 2004)

**LIS J, LEFEVRE P**

"Process for preparing a directly compressible beta-cyclodextrin, and directly compressible beta-cyclodextrin thus obtained"

US 2003/0065167 (Pub. Date : Apr. 3, 2003)

**LEFEVRE P, DUPAS H**

"Method for preparing a sweetening tablet and resulting sweetening tablet"

WO 2003/001925 (Pub. Date : Jan. 9, 2003)

**LEFEVRE P, FRANCOIS A, FACON P, QUETTIER C, PARISSAUX X**

"Film forming starchy composition"

US 2007/0110799 (Pub. Date : May 17, 2007)

**DUFLOT P, BOIT B, LEFEVRE P, LIS J**

"Granulated sorbitol and method for the preparation thereof"

FR 2 890 315 (Pub. Date : Mar. 9, 2007)

**DUFLOT P, BOIT B, LEFEVRE P, LIS J**

"Granulated sorbitol and method for the preparation thereof"

WO 2008/012465 (Pub. Date : Jan. 31, 2008)

## **Publications**

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**SERPELLONI M., LEFEVRE P., DUSAUTOIS C.**

Glucono-delta-lactone in milk ripening.

Dairy Industries International, 1990, 55, 2, 35-39.

**COURTEHOUS D., LE BOT Y., LEFEVRE P., RIBADEAU-DUMAS G.**



Les polyols en confiserie - Un atout pour conquérir de nouveaux marchés.

Filière Gourmande, Octobre 1995, 28, 37 et 40.

COURTEHOUX D., LE BOT Y., **LEFEVRE P.**, RIBADEAU-DUMAS G.

Polyols: the key to "lite" confectionery.

Food Technology International : Europe, 1996

SOYEUX P., DELACOURTE A., DELIE B., **LEFEVRE P.**, BONIFACE B.

Influence and optimisation of operating parameters with a new binder in wet granulation

European Journal of Pharmaceutics and Biopharmaceutics, 1998, 46, 1, 95-103

SIMON D., COMINI S., COQUEL B., **LEFEVRE P.**, LIS J.

Comparison of different mannitols in direct compression

Congrès AAPS, 2000, 2 pages.

**LEFEVRE P.**, HÄUSLER O., SCHWARZ E.

Comparison of the tableting properties of a DC lactose/starch compound versus a physical blend of DC lactose and DC starch

AAPS, 2001, October, 1 page.

**LEFEVRE P.**, JOSHI A., DURIEZ X.

Influence of partially pregelatinized starches on the dissolution of drugs with varying solubility from capsule formulations

American Association of Pharmaceutical Scientists, Annual meeting, Salt Lake City (USA), 26 au 30 Octobre 2003

PARISSAUX X., JOSHI A.A., DUSAUTOIS C., LE BIHAN G., **LEFEVRE P.**

Functional Advantages of a novel modified starch over HPMC in aqueous film coating of tablets (poster)

AAPS, 2006, november, 1p.